



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/813,890

03/31/2004

Tatsuhiko Yabuki

82478-6200

5762

21611 7590 12/29/2006  
SNELL & WILMER LLP  
600 ANTON BOULEVARD  
SUITE 1400  
COSTA MESA, CA 92626

EXAMINER

LAZORCIK, JASON L

ART UNIT

PAPER NUMBER

1731

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

12/29/2006

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

## Office Action Summary

Application No.

10/813,890

Applicant(s)

YABUKI ET AL.

Examiner

Jason L. Lazorcik

Art Unit

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/22/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, the instant claim recites the limitation such that the “ the double spiral portion of the tube is positioned parallel with the winding grooves by moving the chuck units in a direction that make the chuck units farther apart from each other along a line that connects one of the chuck units with the other of the chuck units when viewed from a direction toward which an axis of the mandrel extends”. In accord with applicants figure 8, it is unclear to the Examiner how Applicants disclosure provides a for the chuck units moving farther apart during the act of positioning the double spiral schedule portion parallel with the mandrel grooves (e.g. during the winding operation). Specifically, it is the Examiners understanding that applicants disclosure provides for “a first speed at which the glass tube is wound around the mandrel” which is “higher than a second speed at which the chuck units move” as per paragraph [0029]. Even in this scenario the disclosure is understood to require that the chucks approach each other rather than diverge away from each other. In accord with Applicants disclosure and at

Art Unit: 1731

least figure 8, it is unclear how the instant application provides enablement for the chucks moving farther apart at any stage during the winding process when viewed from any axis along which the mandrel extends.

***Claim Rejections - 35 USC § 102***

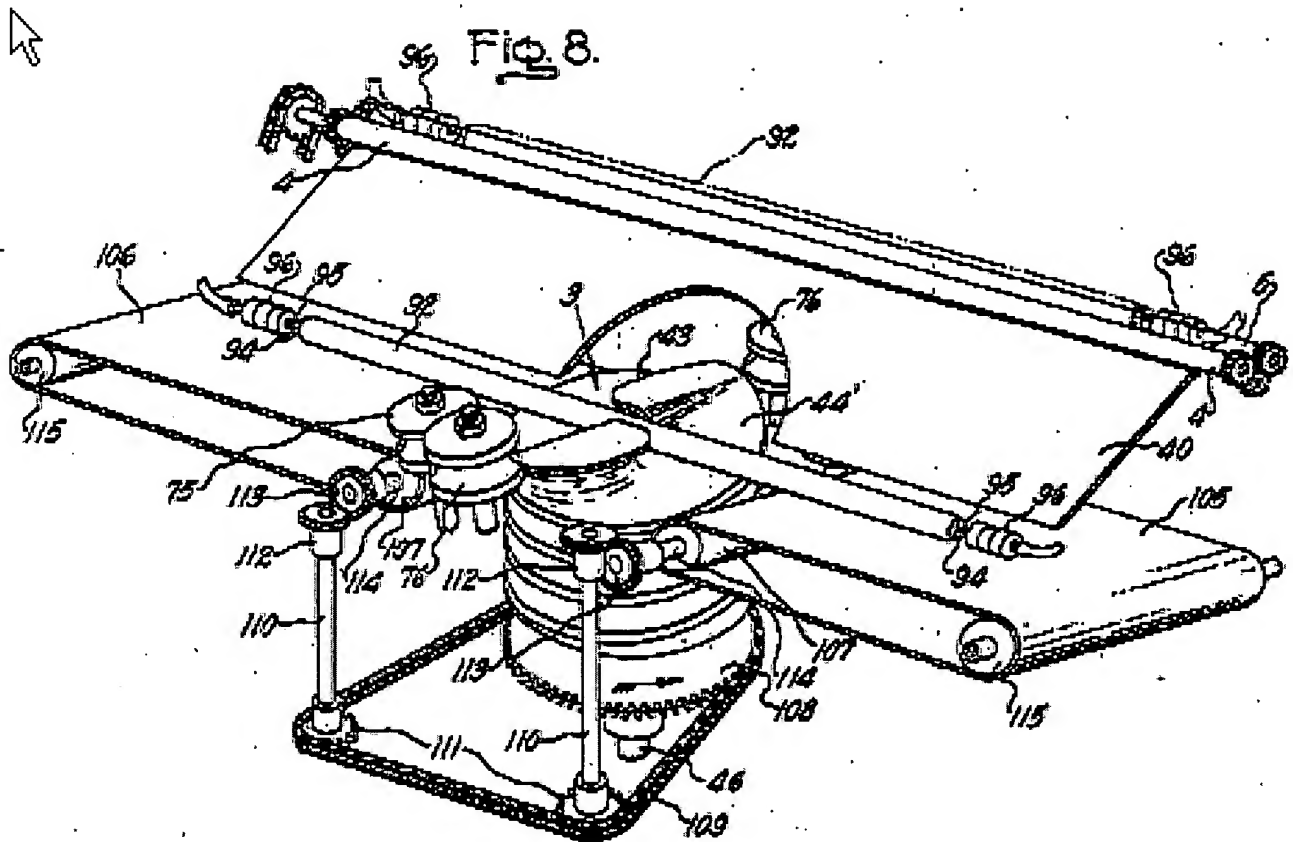
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-7, 12, and 16 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Greiner (US 2,491,857).

With respect to claim 1 and in particular view of the figure 8 excerpt below, Greiner teaches (Column 1, Lines 1-30) a method of manufacturing a double spiral shaped body from a piece of elongated vitreous stock (92). Said method includes a “hanging and holding step” wherein the “substantially straight” section of elongated stock is lowered in a substantially perpendicular orientation with respect to the “mandrel” (3). As evident from the image, the mandrel is disposed beneath “a substantially center of a double spiral scheduled portion” and that the mandrel extends in a “substantially perpendicular” direction. It is further clear from the image that at least a portion of the softened stock is suspended in a substantially horizontal orientation between support belts (105, 106) and that a part thereof sags upon and is “held on a top of the mandrel (3).



The instant reference figures 7 and 12 depict a winding step wherein the glass stock is wound about the mandrel to yield the double helix structure. As further evident in the instant figures, the mandrel provides "winding grooves" along the periphery thereof which correspond to the shape of the formed double spiral". The winding apparatus is further provided with "at least one pair of supporting rollers" (75, 76) which serves to support the softened stock during the winding process. Finally, the instant reference clearly provides for introduction of an internal gas atmosphere while said bend lamb tube is held upon the mandrel in order to maintain the desired tube shape (Column 10, lines 17-31)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2, 3, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greiner as applied to claim 1 and the respective dependent claims under 35 USC 102(b) above.

Specifically regarding Claims 2,3, and 9 Greiner fails to explicitly limit the temperature range of the elongated stock during the stock heating step as set forth by applicant in Claim 2 or that the thermal variance along the length of the stock be limited to +/- 8 degrees centigrade of a target temperature as disclosed in Claim 3. That said, Greiner makes very clear that the length of the vitreous body be heated to a workable state and that there should be a "even distribution of the heat over the entire periphery of the vitreous body (column 1, Lines 24-27). Greiner further indicates that during the heating stage, conditions should be controlled in such a manner as to heat the tubing to

Art Unit: 1731

a workable condition although not so hot as to cause it to collapse. It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to control both the temperature of the elongated stock within the working range (e.g. above softening point) as well as to maintain an even temperature distribution along the length of the elongated stock in such a manner that results in an optimal coiled product.

With respect to Claim 13, Greiner teaches that the guiding rollers (75 and 76) are provided "for directing pressing said vitreous body properly into the grooves of the (mandrel) without distortion" (column 1, Lines 40-42). It is further clear from the elevation figures 2, 7, and 8 that said rollers are inclined at an angle with respect to the horizontal plane defined by the upper surface of the belts (105,106). While the reference fails to provide a specific angle of inclination, absent any unexpected results to the contrary it would have been obvious to one of ordinary skill in the art at the time of the invention to provide said rollers at any angle of inclination that provided the intended "proper" seating of the tubing within the mandrel grooves without deformation.

Claims 10, 11, 14-15, and 17 are also rejected under 35 U.S.C. 103(a) as being prima facie obvious over Greiner as applied to Claim 1 and dependents under 35 USC 102(b) above. With respect to the instant claims, it is noted that the Greiner reference fails explicitly provide a rate of winding higher than the rate at which the chucks advance toward the mandrel. Specifically, Greiner teaches that during the bending operation one should "avoid, as much as possible, all longitudinal lengthening and deformation of said vitreous body" (column 2, Lines 28-30). More specifically, the reference teaches that "the belts (105) and (106) are moved toward the form (3) during (the bending time

Art Unit: 1731

interval) at a rate designed to advance the end portions of the lamp (92) toward the form (3) as rapidly as it is wound thereabout so as to reduce the separate longitudinal movement of said end portions to a minimum and thereby reduce the possibility of any elongation of the lamp (92)" (column 9, lines 61-68).

From the above disclosures, Greiner clearly appreciated the need to balance the lamp winding rate with the translational movement of the lamp end portions in order to avoid deformation of the softened glass body. Further, one of ordinary skill in the art would certainly be apprised of the fact that a compressive force along the axis of a softened vitreous body would tend to bulge or thicken at least a portion said body while a net tensile force would tend to elongate or thin at least a portion of the softened vitreous body. With respect to the instant apparatus, it would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the gear ratios between for example the apparatus gears 108, 111, 112, and 113 using the well-established theories present in the gearing art ([http://en.wikipedia.org/wiki/Gear\\_ratio](http://en.wikipedia.org/wiki/Gear_ratio)). Tailoring these gearing ratios according to the indicated, well established principles would adjust the relative rates of rotation between the mandrel and the belts 105 and 106, consequently affecting the forces imparted upon the softened vitreous body in a deterministic manner. It would therefore have been obvious to one of ordinary skill in the art to optimize the gear ratios in the apparatus in order to optimize the forces imparted upon the vitreous body and thereby "minimize the deformation" of the vitreous body in accord with the teachings of Greiner.



Art Unit: 1731

Claim 15 is rendered obvious over the rejections of Claim 1 under 35 USC 102(b) and in further view of the rejection of Claim 13 under 35 USC 103(a) as presented above.

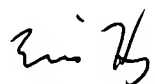
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL

  
ERIC HUG  
PRIMARY EXAMINER